

Analysis of the Non-Pharmaceutical Interventions Reversal Strategies

MITRE Corporation

March 24, 2020

Executive Summary

The rapid transmission coronavirus disease 2019 (COVID-19) has led to the implementation of non-pharmaceutical interventions (NPIs) to slow its spread. We performed simulation-based analysis of the effect of different strategies for removal of NPIs on COVID-19 infections and deaths. Our analysis estimated how the reversal of NPIs (i.e. reopening schools, restaurants, and shelter in place restrictions) too early led to a resurgence of infections and an increase in the number of deaths over time, which would need to be remedied with additional NPIs. We compared six different reverse trigger scenarios including, 1) stopping interventions when the effective reproduction rate (R_t) of the virus falls below one, 2) when there are no new cases for an incubation period, 3) after a specified time period, 4) when there would again be sufficient medical capacity to treat all of the ill, 5) cycling NPIs on and off after an initial period, and 6) when there is sufficient capacity to perform population-wide rapid testing with effective contact tracing.

At the present time, **MITRE recommends all NPIs be held in place.** Our simulation studies highlight the real risk of lifting NPIs prematurely. We should explore alternative strategies and make significant investment in testing and contact tracing. Without this capability, it becomes very difficult to lift NPIs early and not risk a second wave outbreak.